AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-6 (canceled).

7. (Original) A design method of a vibration reduction control for a electric motor, the method comprising:

an identification experiment step of performing an identification experiment for the electric motor;

a model parameter identification step of calculating coefficients of a frequency transfer function based on an input signal and an output signal for the electric motor;

a reference model establishing step of establishing a reference model;

a correction coefficient calculating step of calculating a proportional gain and a differential gain of a controller so as to correspond with the reference model by using a model matching method; and

a judging step of judging whether an apparatus including a controller fulfills a predetermined performance condition or not; wherein

when the apparatus does not fulfill the performance condition, the proportional gain and the differential gain are repeatedly calculated by the correction coefficient calculating step until the apparatus fulfills the performance condition.

8. (Original) A design method of a vibration reduction control for an electric motor according to claim 7, the method further comprising:

a discrete step of performing a discrete processing when the apparatus satisfies the performance condition judged by the judging step.

Claims 9 and 10 (canceled).

11. (Original) A vibration reduction control for an electric motor, the control comprising:

an express means for expressing by a generalized plant on H∞ control problem including characteristic fluctuation and sensibility characteristic of a control system for a transfer function of the controller;

a deal means for dealing a model error corresponding to the characteristic fluctuation and a virtual model error corresponding to a fluctuation of the sensibility characteristic as a structural fluctuation dependently; and

a derive means for adding a scaling matrix with scaling parameter corresponding to the each structural fluctuation to the generalized plant, and deriving the scaling matrix and the controller so as to minimize a H∞ norm of the generalized plant as a H∞ control problem with constant scaling matrix.

12. (Original) A design method of a vibration reduction control for an electric motor includes a controller for obtaining a corrected amount performing an addition or a subtraction for

an instruction value on the torque control of the electric motor based on a motor rotational number, the method comprising:

setting a scale parameter d to a predetermined standard value; calculating the controller K(s) by γ-repeat method as H∞ control problem;

memorizing a H∞ norm of the generalized plant corresponding to a scaling parameter d at that time,

calculating the controller by gradually changing from the standard value for the scaling parameter d;

memorizing H∞ norm of the generalized plant corresponding to the scaling parameter d at that time,

calculating a local minimum value regarding H∞ norm of the generalized plant as a function f(d) for the scaling parameter d; establishing a scaling matrix D by a value of the scaling parameter d at that time;

calculating the controller K(s) by γ-repeat method using the value of the scaling parameter d giving local minimum value of function f(d);

and regarding the controller K(s) as an optimum solution, wherein

the optimum solution of the H∞ control problem with constant scaling matrix is calculated according to each of the processing steps.